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## PROVISIONAL INTELLIGENCE REPORT

# THE ENGINEERING INDUSTRIES OF DAIREN



CIA/RR PR-102  
4 March 1955

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PROVISIONAL INTELLIGENCE REPORT

THE ENGINEERING INDUSTRIES OF DAIREN

CIA/RR PR-102

(ORR Project 38.251)

NOTICE

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~~CONFIDENTIAL~~CIA/RR PR-102  
(ORR Project 38.251)~~SECRET~~THE ENGINEERING INDUSTRIES OF DAIREN\*Summary

The major engineering industries of Dairen (Ta-lien) include shipbuilding yards and railroad equipment, metalworking, and machine-building plants. The plant facilities of the shipbuilding and railroad equipment industries are among the largest in Communist China. The other engineering industries are of less significance. Nonengineering industries include cement and chemical plants and a petroleum refinery.

The current plans of the Chinese Communists do not appear to include any major expansion of the engineering industries of Dairen, and the city will probably remain of secondary importance in any over-all buildup of the Manchurian economy. The Chinese currently control a majority of the engineering industries of Dairen.

Although most of the output of the engineering industries of Dairen except ships goes into the Chinese economy, the industries are largely dependent upon the USSR for inputs of equipment and of certain raw materials. Since 1951, however, steel has become increasingly available from An-shan. The industries are currently handicapped by a shortage of skilled workers and of qualified technical and managerial personnel, thus limiting production and setting bounds to the expansion of facilities.

The Sino-Soviet Shipbuilding Company, the largest shipyard in Dairen, is engaged primarily in the repair of Soviet merchant ships but also constructs small craft for export to the USSR. The main shops of the Ch'ang-ch'un Railway, one of the largest plants for the manufacture, assembly, and repair of locomotives and rolling stock in China, are producing at a capacity far below 1945 levels. Machine Plant No. 17 and the other components of the metalworking and machine-building industries are producing a small amount of industrial

\* The estimates and conclusions contained in this report represent the best judgment of ORR as of 1 October 1954.

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machinery and a variety of other metal products. The electrical equipment industry is small, and capabilities for the manufacture of weapons and ammunition are slight. Dairen does have, however, large munitions facilities which are probably used for the storage and loading of ammunition.

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I. Introduction.

A. Geographical Basis for Development of Dairen.

Dairen is in the former Kuan-tung leased territory in Southern Manchuria. Dairen's status as an industrial center is related to its excellent port facilities and its proximity to sources of inputs and to markets. Its harbor is large and is free of ice during the winter, and Dairen has become an important transshipment point for goods entering and leaving Manchuria.

By 1939 the Japanese had developed the port facilities to an annual transshipment capacity of 12 million tons. During the year 1938-39, 10.4 million tons of shipping passed through the port, 1/\* and the cargo handled represented 67 percent of the value of that handled by all customs districts of Manchukuo.\*\* 2/ Railroads connect the city with Mukden, An-shan, Fu-shun, Pen-ch'i, and other Manchurian points, as well as with North China, North Korea, and the USSR.

B. Principal Industries in Dairen.

The Japanese built up a versatile industry in Dairen during their tenure from 1905 to 1945. By the time of the Japanese surrender in August 1945, the major industries were large by Chinese standards, although small in comparison with those of the US.\*\*\* The shipbuilding facilities were equipped to build and repair

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\* Footnote references in arabic numerals are to sources listed in Appendix E.

\*\* Former state set up in Manchuria under Japanese influence in 1932.

\*\*\* This report is concerned only with the engineering industries of Dairen, the principal products of which are ships, railroad equipment, metal products and machines, electrical equipment, and weapons and ammunition. As for ammunition, the report deals only with fabrication of metal components and with loading and storage.



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oceangoing vessels. Facilities for the building, assembly, and repair of locomotives and rolling stock were among the largest on the Asiatic mainland. The metalworking and machine-building industry included one of the largest plants in Manchuria as well as numerous smaller ones. The chemical industry included two large producers. The Manchurian Chemical Industries Company in 1945 had an annual capacity of 240,000 metric tons\* of ammonium sulfate, 175,000 tons of sulfuric acid, 70,000 tons of ammonia, and 14,000 tons of nitric acid. The Manchurian Soda Company in 1945 had an annual capacity of 70,000 tons of soda ash. 3/ The petroleum refinery in Dairen had a capacity of approximately 150,000 tons per year, 4/ and the Onoda Cement Company had a capacity of 250,000 tons. 5/ Other industries in Dairen include the bean oil extraction, electrical equipment, glass, textile, ceramics, dye, paint, and munitions industries.

C. Shortages since 1945.1. Skilled Labor.

After 1945 the Japanese population of Dairen was repatriated, and the industries lost a large number of their skilled Japanese workers, engineers, technicians, and administrative personnel. In 1943, one-quarter of Dairen's population was Japanese. 6/ By the end of 1949, all but 1,000 Japanese are reported to have left. 7/ In 1941, 13 percent of the 28,100 workers employed in the engineering industries were Japanese, and the percentage was probably even higher in 1945. 8/ The importance of the Japanese element is illustrated by the 1945 employment figures of the three largest plants. The Dairen Machinery Manufacturing Company with a total of 8,500 workers employed 1,500 Japanese. The South Manchuria Railway Shops employed 2,000 Japanese out of a total of 5,000 workers. The Dairen Dock employed 1,500 Japanese workers. 9/

The Japanese population had dominated governmental, managerial, and technical positions in Dairen during their long tenure, and it had been their policy not to develop a force of skilled Chinese workers and technical personnel. 10/ The effect of the loss of Japanese workers cannot be measured, but the process of developing a skilled labor force among the Chinese will be slow. Dairen must

\* This was the rated capacity. Actual production of cement probably did not exceed 200,000 tons. (Throughout this report, tonnages are given in metric tons unless otherwise specified.)

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compete with other industrial areas for skilled labor as it becomes trained.

An attempt has been made to alleviate the shortage of skilled personnel. In 1949, Dairen University was established as a successor to the South Manchurian Technical College, 11/ and the courses were to include engineering, medicine, finance, economics, and the Russian language. There were to be 2,000 students by 1950. At the end of 1953, this university was said to be heading for moderate expansion. 12/ Training programs have also been set up in the larger plants.

The training effort seems feeble in relation to the needs of the engineering industries. Dairen University's small enrollment is divided among several fields. Moreover, trainees of both the university and the company systems may be sent to other industrial cities upon completion of training.

2. Industrial Equipment.

The Soviet dismantlement of Manchurian plants after August 1945, coupled with Chinese looting, seriously reduced the capacity of two engineering industries -- railroad equipment and metalworking and machine-building. The largest nonengineering industry also suffered. The ammonium sulfate capacity of the Manchurian Chemical Industries Company was reduced by more than two-thirds, although the nitric acid capacity, of importance in explosives manufacture, was not affected.

D. Control of the Engineering Industries since 1945.

The Sino-Soviet Treaty of 14 August 1945 gave the USSR a special status in Dairen and Port Arthur, and the two cities were occupied by Soviet forces. The Russians soon began to exercise a large degree of control over Dairen industry. The control over the engineering industries, except shipbuilding, has been gradually relinquished to the Chinese Communists. There have been three instruments through which Soviet control has been exercised.

1. Sino-Soviet Shipbuilding Company.

The first instrument of Soviet control was the Sino-Soviet Shipbuilding Company (Sovkitsudostroy). (See II, B, below.)

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2. Chinese Ch'ang-ch'un Railway.

Soviet control of railroad equipment production was exerted through its status in the Chinese Ch'ang-ch'un Railway, granted by the Sino-Soviet Treaty of August 1945. In accordance with this special status, managerial and technical personnel were attached to the Main Shops of the Ch'ang-ch'un Railway. After the termination of the Sino-Soviet railroad arrangement in December 1952, management of the Ch'ang-ch'un Shops in Dairen was passed to the Chinese, 13/ although it is probable that Soviet technical personnel remained. These Soviet technicians have probably become fewer in number.

3. Dal'energo.

The Far Eastern Power Trust, known as Dal'energo, was a joint Sino-Soviet company formed in 1945, shares of which were owned in equal proportion by the Chinese and the Russians. 14/ The company controlled the distribution of power, the water bureau, the machinery plant which subsequently became Machine Plant No. 17, the electric lamp plant, the electrical equipment plant, the cement plant, the soda plant, the large chemical plant, and other plants. 15/ Production planning was done by Dal'energo. 16/ According to Sino-Soviet agreement, this company was to have been dissolved by the end of 1950, and control of the subsidiary companies was to be turned over to the Chinese Communists. This agreement has been carried out, but after the Chinese took over, Soviet advisors and technical personnel remained in some of the plants, though in diminishing numbers.

4. Assumption of Control by the Chinese Communists.

With the end of special Soviet industrial control arrangements, administration of all the engineering industries except ship-building came under the control of appropriate Chinese Communist government organs. Managerial as well as technical positions have been assumed by the Chinese, and the local power of decision within plants now rests with the Chinese. 17/ Production plans and material quotas, however, are imposed by the appropriate ministries from a higher level. 18/

E. Supply of Electric Power.

The supply of power is thought to be adequate for the needs of the engineering industries. Sources of power are the Sup'ung

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(Suiho) hydroelectric plant and three Dairen thermal plants.\* 19/  
According to the Chinese Communist press, one of the thermal plants is  
being expanded. 20/

II. Shipbuilding Industry.

A. Introduction.

The capacity of Dairen's shipbuilding industry is one of the two largest in Communist China. During their tenure the Japanese developed 2 shipbuilding yards, 1 large installation and 1 for construction of small vessels. They also developed a small yard for repair of vessels up to 500 gross register tons (GRT).\*\*

Shortly after the Japanese surrender, the Russians took control of the largest yard and have monopolized its facilities for building and repair. The yard's main function is repair of Soviet merchant ships. The heaviest volume of such work is done during the winter months.

B. Sino-Soviet Shipbuilding Company (Sovkitsudostroy).\*\*\*

1. Facilities.

This yard has facilities for the building and repair of oceangoing merchant ships. These facilities include 2 graving docks, 5 repair berths (including 1 repair and fitting-out berth) for along-side repair, 1 marine railway for repair or building of small wooden craft, and 3 shipbuilding ways. 21/ Shops included in the yard's

\* The Kan-ching-tzu plant, the Amanagawa plant, and the plant of the former Onoda Cement Company. The status of the latter is not clear. Its operation may be devoted only to the requirements of the cement company.

\*\* Gross register tonnage is a measure wherein the entire internal cubic capacity of the vessel is expressed in register tons (100 cubic feet to the ton). Certain items are not included in the measurement, such as peak tanks and other tanks of water ballast, open fore-castle, bridge and poop, hatchway excess, certain light and air spaces, anchor gear, steering gear, wheelhouse, galley, cabins for passengers, and other minor spaces specified by law.

\*\*\* Point 15 on the map of Dairen, inside back cover.

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facilities are capable of handling most of the problems of construction and repair, 22/ although most of the equipment is said to be old. 23/

The yard did not suffer removals of equipment by the Russians after the Japanese surrender in 1945. 24/ On the contrary, the Russians have installed an unknown quantity of equipment. 25/ As of January 1951, at least one large shop originally intended as a plate and shape shop had been added to the yard's buildings. 26/

2. Control.\*

The formal administrative organization is said to be in the form of joint control by Russians and by Chinese Communists. Reports indicate that membership in the controlling board (reportedly made up of 10 men) is equally divided between Chinese and Russians and that the office of director is to be held alternately by a Russian and a Chinese for a term of 3 years. 28/

3. Labor Force.

The total number of workers is believed to have been 9,500 in 1953. 29/ The number of shifts varies from one time to another and from one department to another according to changing work load. In the winter months, when the load is greatest, parts of the ship repair section operate on the basis of two and three 8-hour shifts per day, 6 days a week. 30/

Of the total of 9,500 workers, it is reported that 1,000 are in technical or administrative duties. The functional breakdown of the total is shown in Table 1.\*\*

The skill level among the 8,000 production workers is low. In 1953 the annual turnover in this category was reported to be 30 percent. 31/

The Sino-Soviet Shipbuilding Company suffers from Dairen's shortage of skilled technical and administrative personnel. Before August 1945, the company had 1,500 Japanese technical and administrative workers. Most of these had been repatriated by the spring of

\* On 31 December 1954 the Soviet shares of the Sino-Soviet Shipbuilding Company were transferred to China in accordance with the Sino-Soviet communique of 11 October 1954. It is not known what effect this change will have upon production of the yard. 27/

\*\* Table 1 follows on p. 8.

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Table 1

Functional Classification of Workers  
at the Sino-Soviet Shipbuilding Company 32/  
1953

<u>Classification</u>	<u>Number of Workers</u>
Production workers	8,000 <u>a/</u>
Maintenance workers	300
Apprentices	200
Office workers	600
Engineers	100
Technicians	300
Total	<u>9,500</u>

a. This category no doubt includes a greater proportion of men whose function is loading, lifting, and carrying materials and equipment than is the case with a group of equal size in the US.

1947, and according to 1 report only 10 were left by the end of 1949. 33/ Scarcity of qualified technical and administrative personnel was still a problem in 1953. 34/

Soviet interest in the dockyard has led the Russians to send managerial and technical personnel there in order to control its operations and to help make up for the shortage of qualified Chinese personnel. White Russians hold office and technical jobs, but they are probably not given any authority. 35/ The nationality breakdown of office and technical personnel for 1949 and 1953 is shown in Table 2.\*

There is an effort to overcome the shortage of skilled personnel by means of training. As of 1953, 200 apprentices were in training. At its inception, Dairen University inaugurated a 5-year

\* Table 2 follows on p. 9.

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Table 2

Nationality Groups among Administrative and Technical Personnel  
at the Sino-Soviet Shipbuilding Company a/  
1949 and 1953

<u>Personnel</u>	<u>Chinese</u>	<u>Russians</u>	<u>White Russians</u>	<u>Japanese</u>	<u>Total</u>
<u>1949 36/</u>					
Administrative	300	100	99	1	500
Technical	40	50	0	5	95
<u>1953 37/</u>					
Administrative	480	120 b/		0	600
Technical	250	50	100	0	400

a. Total employment in the yard for 1949 was 7,600. Total employment for 1953 was 9,500.

b. This figure includes White Russians. The ratio of Russians to White Russians is unknown.

shipbuilding course. 38/ It is not known how many of the trainees in either of these systems accrue to the labor force of the yard. Many of them may go elsewhere after training, as do trainees within other industries in Dairen.\*

4. Production.

a. New Construction.

New construction by the Sino-Soviet Shipbuilding Company has gone almost exclusively to the USSR since 1945. Production has been confined almost wholly to two types of small craft -- diesel-powered tugs or launches and nonpowered barges. These are probably used in Soviet Far East harbors and rivers. 39/

\* The metalworking and machine-building industry is a case in point.

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In 1953, 1,500 of the 8,500 manual workers employed at the yard were engaged in new construction. 40/

Tugs of 150 horsepower and 1,200 horsepower are manufactured. Small tugs are described as welded, all-steel craft, probably of prefabricated construction. 41/ The 1,200-horsepower tugs are described as oceangoing vessels having two 600-horsepower diesel engines. 42/

Barges of two types are constructed, most of them estimated to be of 61 GRT. The others are estimated to be of 305 GRT. Barges of both sizes are of welded steel construction, and at least the smaller ones are prefabricated. Most of the small ones have been tank barges. The larger ones have been tank barges or dry cargo barges. 43/

The estimated production of tugs and barges by this company is shown in Table 3.

Table 3

Estimated Production of Tugs and Barges  
at the Sino-Soviet Shipbuilding Company 44/  
1948-53

		GRT					
<u>Vessel</u>	<u>per Unit</u>	<u>1948</u>	<u>1949</u>	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>
Tugs <u>a/</u>	19	855	1,520	1,710	2,090	950	0
Barges	61	5,612	6,100	7,076	7,808	8,296	732
Barges	305	0	2,440	2,440	3,660	3,660	6,405
<u>a. 150-horsepower.</u>							

It is believed that the first five 1,200-horsepower tugs will be completed in 1954. The production of 150-horsepower tugs was discontinued in 1952. Production of 1,200-horsepower tugs is reported to have been slower than was planned and may be presenting technical difficulties to the yard. During 1953, construction of a passenger ferry boat (250 GRT) was completed. 45/

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S-E-C-R-E-Tb. Repair.

The main postwar activity of the Sino-Soviet Shipbuilding Company has been the repair of Soviet merchant ships, especially those of the polar routes. These come to Dairen in large numbers during the winter. 46/ The emphasis on ship repair rather than on new construction at this yard is illustrated by the fact that in 1953, 7,000 of the 8,500 manual workers at the yard were engaged in ship repair.

The company is capable of repair work ranging from minor repairs to general overhaul and is able to make major hull and engine repair. It fabricates parts as needed, including engine parts and heavy parts, such as propeller shafts. 47/

The yearly tonnage of repair, 1942-56, is shown in Table 4.

Table 4

Ship Repair at the Sino-Soviet Shipbuilding Company  
1942-56

<u>Year</u>	<u>GRT</u>
1942 <u>a/</u>	100,000
1943	90,000
1944	60,000
1945	35,000
1946	100,000
1947	150,000
1948	200,000
1949	200,000
1950 <u>b/</u>	200,000 to 300,000
1951	200,000 to 300,000
1952	200,000 to 300,000
1953	200,000 to 300,000
1954	200,000 to 300,000
1955	200,000 to 300,000
1956	200,000 to 300,000

a. 1942 through 1949 reported. 48/

b. 1950 through 1956. 49/

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For the period 1950-56, it is estimated that annual repairs include work on 60 to 75 ships with an average tonnage of 4,000 GRT. During the same period, 10 general overhaul jobs are probably included among the estimated number of ships repaired per year. 50/

c. Auxiliary Production. 51/

In addition to the fabrication of parts needed to satisfy particular repair needs, the yard has made boilers, tanks, anchors, and steel derricks with a capacity of 3 to 5 tons. Anchor chains are made by casting processes and are sent to the USSR for merchant ship use. Boilers and water and oil tanks are sometimes made for other factories in Dairen.

5. Inputs.

The USSR has been the most important supplier of steel, machine tools, and diesel engines for tugs (150-horsepower and 600-horsepower). It is believed that by 1952, An-shan was sending a greater proportion of steel to the yard than had previously been the case. 52/

C. Port Arthur-Dairen Shipbuilding Yard.\* 53/

The Port Arthur-Dairen Shipbuilding Yard is immediately west of the Sino-Soviet Shipbuilding Company. As of 1949, this yard was capable of building and repairing small merchant vessels, both steel and wooden. As of January 1951, its facilities included 1 graving dock, probably 1 shipbuilding way, probably from 10 to 15 marine railways, and 1 pier which may have been a fitting-out berth. The total labor force in 1950 was 467.

In 1948 this yard is reported to have built 2 steel cargo vessels of 100 GRT and 2 steel tugs of 15 GRT. In 1949, 2 steel cargo vessels of 100 GRT and 4 wooden fishing boats of 50 GRT were built, and 4 additional wooden fishing boats of 50 GRT were under construction.

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\* Point 14 on the map of Dairen.

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D. Former Nishi Damari Ship Repair Yard.\* 54/

The former Nishi Damari Ship Repair Yard is west of the Port Arthur-Dairen Shipbuilding Yard. In 1949, it was reported capable of making limited repairs to wooden and steel vessels up to 500 GRT. It had 1 graving dock capable of handling a ship of 500 GRT with a length of 198 feet and a beam of 20 feet. There were 3 marine railways. Aerial photography of January 1951 shows that the facilities were probably the same as reported for 1949. Engine repairs were apparently done by outside shops, and hull repairs were for the most part limited to caulking.

E. Expansion Possibilities.

The Port Arthur-Dairen Shipbuilding Yard could be expanded according to a plan drawn up by 1949. This was a plan for limited expansion and involved building a graving dock large enough for one 4,000-ton vessel, the construction of 3 building ways large enough for vessels up to 2,000 gross tons, and the building of a fitting-out berth. Aerial photography of January 1951 showed that some buildings called for in this plan had been constructed. The shop facilities of the former Nishi Damari Yard could be expanded and may have been expanded since 1949.

III. Railroad Equipment Industry.

A. Main Shops of the Ch'ang-ch'un Railway.\*\*

The facilities of this plant for the manufacture, assembly, and repair of locomotives and rolling stock are among the largest and most nearly complete in Communist China. The plant was developed by the Japanese to serve the South Manchuria Railway Company and was formerly known as the South Manchuria Railway Shops.

1. Capabilities.

a. Condition of Equipment.

The plant did not suffer seriously from Soviet removal of equipment after August 1945. 55/ Soviet personnel took over the direction of the plant soon after the surrender, and the plant has received Soviet equipment. 56/ The plant's physical facilities are

\* Point 11 on the map of Dairen.

\*\* Point 7 on the map of Dairen.

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therefore probably on a par with those of 1945. Thus the best indication of capabilities is the reported capacity in 1945.

b. Construction Capacity in 1945. 57/

The maximum yearly construction capacity in 1945 was 72 main-line locomotives, 72 passenger cars, and 2,400 freight cars.

Several types of main-line locomotives made up this yearly total, and passenger cars included coaches, sleepers, and diners. The freight cars were of several types: self-dumping gondolas, hoppers, livestock cars, tank cars, refrigerator cars, flatcars, and boxcars. The standard gondolas were of 30-ton capacity, with steel chassis and wooden deck and sides. Standard hoppers were of 30-ton capacity. Flatcars were of steel with board deck. Boxcars were built of steel and lined with wood. Passenger cars were built of steel.

Parts manufactured at the plant included freight car wheels, locomotive axles and wheels, springs, bearings, and valves. All steel castings necessary for locomotives and freight cars could be cast at the plant.

c. Repair Capacity in 1945.

In 1945, repair capacity is reported to have been 240 to 420 locomotives,\* 540 to 720 passenger cars, and 4,200 to 5,400 freight cars.\*\* Repairs ranged from minor repairs to general overhaul of cars and locomotives. 59/ Normal replacement parts were made at the plant.

2. Control.

The plant is under the jurisdiction of the Chinese Communist Rolling Stock Bureau of the Ministry of Railways. On the

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\* The higher figure in each case represents maximum capacity if the plant's facilities were devoted wholly to repair to the exclusion of new construction.

\*\* This estimate is closely confirmed by several other reports in the case of locomotives and passenger cars. The estimate of freight car repair is considerably higher than is given by other reports of 1945 capacity but is in line with actual performance of the plant for 1944. 58/

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local level, management probably passed from Soviet hands after December 1952 and is now exercised by Chinese management personnel. 60/

3. Labor Force. 61/

The 1945 labor force was reported to be 5,000, working in 1 shift of 8 to 10 hours, 6 days per week. The breakdown of function and skill is reported to be as follows: administrative personnel, 200; engineers, 200; technicians and highly skilled machinists, 1,500; and machinists, helpers, and laborers, 3,100.

The majority of the highly skilled personnel were Japanese. All but 20 or 30 of the 200 engineers were Japanese, and the majority of the 1,500 technicians and skilled machinists were Japanese. The majority of the machinists, helpers, and laborers were Chinese, about half of them unskilled. Of the total labor force, 2,000 were Japanese. As in other Dairen industries, this high proportion of Japanese skilled personnel was a critical factor. Most of these people were repatriated by 1947, and their departure created a shortage of skilled labor which has probably been a severe limitation on production.

Soviet engineers and technicians have been assigned to the plant. In 1948 there were said to be 20 Russians in charge of principal shops in addition to managerial personnel. In late 1951, the number of Soviet technical people had not diminished. The presence of these engineers and technicians does not, of course, make up for the loss of skilled Japanese engineers, technicians, and skilled workers.

As in the shipbuilding industry, an attempt to overcome the shortage of skilled labor has been made through training within the plant, but the process will require several years. The present labor force is about 5,000.

4. Production.

a. New Construction.

The volume of construction of locomotives and rolling stock is far below 1945 capacity. Up to early 1952, no locomotives had been built, 62/ and it is doubtful that the plant has resumed manufacture on any large scale.

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The plant is reported to have started producing freight cars again in 1951, and the present rate is estimated to be 700 to 1,000 cars per year. Reports mention flatcars, wooden boxcars, steel freight cars, and tank cars. Building of welded steel passenger cars is reported to have been started in 1953, though the number constructed is unknown. 63/

Production of the plant is reported to go mainly to the Chinese Ch'ang-ch'un Railway and partially to other Chinese lines. 64/

b. Repair.

The plant makes major and minor repairs to locomotives, freight cars, and passenger cars and also makes repair parts. 65/

B. Manchuria Rolling Stock Manufacturing Plant.

Until 1945 this plant was a freight car assembly facility located immediately northwest of the present Main Shops of the Ch'ang-ch'un Railway. It had an annual capacity of 800 freight cars and assembled boxcars and gondolas. This plant did not suffer from Soviet removals after the surrender of Japan, but its status subsequent to 1945 is obscure. 66/ Apparently it no longer exists as a producer of freight cars, and it may have been absorbed administratively by the Main Shops of the Ch'ang-ch'un Railway. If this amalgamation has taken place, the shops may have been converted to other purposes, such as repair, which would fit into the general plant scheme of the Main Shops of the Ch'ang-ch'un Railway. Since the production of freight cars by the latter is estimated to be between 700 and 1,000 per year, it is probable that the 1945 capacity of the Manchuria Rolling Stock Manufacturing Plant (800 cars per year) has not been added to that of the Main Shops.

C. Machine Plant No. 18. 67/

Machine Plant No. 18 is reported to have produced a few freight cars since 1945. It is on the premises of the former Dairen Machinery Manufacturing Company, which until 1945 was a major producer of locomotives and rolling stock. The Dairen Machinery Manufacturing Company lost most of its equipment through Russian dismantlement and Chinese looting in 1945. The plant was so thoroughly dismantled that its former capacity provides no measure of the present capacity of Machine Plant No. 18.

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D. Former Dairen Dock Iron Works.

Until at least 1945, the plant that is now the Sino-Soviet Shipbuilding Company engaged in the production of rolling stock as well as as in shipbuilding. The rolling stock production took place in plant facilities at the western end of the yard's shop area. This activity was terminated by 1949, and the shops formerly used for rolling stock production were converted to purposes connected with shipbuilding and ship repair. 68/

IV. Metalworking and Machine-Building Industry.

A. Machine Plant No. 17.\* 69/

1. History.

Machine Plant No. 17 is the most important metalworking and machine-building plant in Dairen. It was formed by the consolidation of the metalworking and machine-building equipment that was left after the Russian removals and the Chinese looting. The plant was constructed under the auspices of the Soviet-sponsored Dal'energo Trust, and the USSR sent machine tools. Over a period of time, extending into 1949, a heterogeneous collection of machinery was put together under one management and became known as the Machine Factory of Dal'energo. It was a principal element in the Dal'energo complex of enterprises and took its orders from that organization. In 1951 the company was turned over to Chinese Communist management after the closing down of the Dal'energo enterprise. The company was then placed under the management of the Chinese Communist government and renamed Machine Plant No. 17. Henceforward managerial and technical positions began to be filled by Chinese.

2. Capabilities.

Machine Plant No. 17 is best suited for the filling of miscellaneous orders rather than for specializing in the production of a limited number of commodities. Because of its miscellaneous assemblage of equipment, Machine Plant No. 17 has been used for jobbing purposes. The plant has equipment for casting, forging, machining, assembling, cold pressing (of sheet thickness not more than 1 millimeter and area not over 2 square feet), machinery

\* Point 8 on the map of Dairen.

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repair (used for the plant's own equipment), electric welding, and metal plating. The welding plant is said to be the best element among the facilities. The casting department includes 5 furnaces, (1 electric furnace) and is capable of making iron castings up to about 2 tons. One furnace turns out steel. The facilities can also produce aluminum castings, malleable iron castings up to 30 kilograms, and special iron castings for piston rings and cylinder sleeves. The plant includes a metallurgical testing laboratory for testing un-standardized metal from An-shan and for designing new equipment.

The best available indication of plant capacity is the plan of production for 1952.\* This plan was drawn up by plant engineers and represented what was considered by them to be the best use of equipment possessed at that time.

3. Labor Force.

In March 1952 the labor force amounted to about 2,900. Shifts were of 8 hours, the number of shifts differing from time to time and from shop to shop, depending on the current production load in various shops. Workers numbered about 1,400 skilled, about 1,000 semiskilled,\*\* and from 150 to 200 unskilled.\*\*\* For the production assigned to this plant there was no shortage of skilled labor, but efficiency appears to have suffered as Chinese have assumed managerial and technical positions. In 1950 there were five Soviet technicians (engineers and bookkeepers), but all had left the plant by 1952. Until the Chinese assumed full management, technical and managerial positions were held by experienced White Russians as well as by Soviet personnel. By 1952 there were still six White Russians, but they had been reduced to advisory status. Chinese successors in managerial and technical positions are said to have been lacking in experience and training.

Training of workers takes place at Machine Plant No. 17. Groups of 200 pupils are trained for periods of 4 to 6 months. They are trained not for the plant, however, but for Chinese industry generally and do not represent a regular increment to the plant's trained labor force. The plant, for example, is reported recently to have sent a large group of trainees to An-shan for work. 70/

\* See Appendix A, Table 5, p. 27, below.

\*\* Including 200 trainees.

\*\*\* Cleaners and loaders.

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4. Production.

Production of Machine Plant No. 17 is miscellaneous in character and ranges from heavy industrial machinery, such as bridge cranes and steam winches, to nuts and bolts. The production differs from year to year except that cranes appear to be a stable element. Press reports within the last year speak of crane production in Dairen, and the references are probably to Machine Plant No. 17.\* 71/

The amount of production is available only for 1949.\*\* Production is said to have increased by 20 to 25 percent in terms of man-hours in each of the succeeding 2 years (through 1951).

5. Consumers.

Consumers have included the USSR, other Manchurian points, other enterprises in Dairen, and the Chinese Communist army. Bridge cranes, gasoline storage tanks, and possibly mine cars were shipped to the USSR from Machine Plant No. 17. The heavy shipment of goods to the USSR apparently stopped in 1951. Miscellaneous products, however, continued to be supplied to the Soviet military units stationed in Kuan-tung. Bridge cranes and steam rollers have been shipped to other points in Manchuria. Motor and transformer bodies and electric lamp caps have been supplied to the Dairen electrical equipment industry, and water pipes have been supplied to the city water system as well as to the soda plant. The Chinese Communist army has received pontoons, gasoline tanks, and automotive spare parts and tools from the plant.

6. Inputs.

The USSR has been a major source of inputs, but in 1951 and 1952 the proportion of inputs from Chinese supplies began to rise.\*\*\* The USSR has supplied iron, steel, and other metals, cable,

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\* The reports refer to the Dairen Crane Factory (one report uses the name Derrick Factory). It may be that this is another company, but this is doubtful. Crane production fits better into the history and productive capacity of Machine Plant No. 17 than into that of other plants. It is believed that the name Dairen Crane Factory is being applied to Machine Plant No. 17 and may be either a new official name or a descriptive designation.

\*\* See Appendix A, Table 6, p. 27, below.

\*\*\* See Appendix A, Table 7, p. 29, below.

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insulated wire, electrical appliances, and bearings. In 1951, shipments of steel, iron, and pig iron began arriving from An-shan. Mukden began supplying steel cable, insulated wire, and electrical appliances and motors in 1951 and 1952. Motors were sent from Shanghai in 1952. It is probable that at least higher grades of steel, other metals, bearings, and machinery continue to come from the USSR.

7. Planning.

Ultimate decisions on production plans are imposed upon the plant by higher authority, although plant authorities do take part in planning processes by submission of proposed yearly production plans. It is evident from the variegated nature of the output that Machine Plant No. 17 is being used as a jobbing shop for fulfillment of miscellaneous orders for the regime. A more balanced use of equipment would result in a considerably higher output, but this kind of miscellaneous and changing production may precisely fill certain needs of a planned economy in China.

B. Other Metalworking and Machine-Building Plants.

Information on plants other than Machine Plant No. 17 is included in Appendix B. Production has included machine tools (lathes, presses, and cutting machines), pumps, winches, steam rollers, boilers, pipe fittings, structural framework, wire, and carbon electrodes. Some of the production went to the USSR as late as 1950. Lathes were shipped to other points in Kuan-tung and Manchuria. Other equipment was sold to local industries. Reports indicate that production volume was modest, and aerial photography (dated January 1951) supports this conclusion. <sup>72/</sup> The small volume of production in 1951 may have been due to scarcity of materials and skilled labor. The USSR contributed to the equipment of these plants and probably also to material inputs.

Small private machine and metalworking shops may all have gone out of existence in Dairen by 1954. In 1940 there were 48 such shops having an average labor force of 35. <sup>73/</sup> Throughout the first few postwar years and down to the time of the Chinese assumption of control of industry, such shops were in operation and had an appreciable effect upon the output of the metalworking and machine industry. Their number, however, had reportedly diminished to 10 or 15 in early 1952, and they may possibly all have disappeared by 1954. This development has resulted from a policy of taxing the private

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shops out of existence and forcing owners to sell equipment to the government. This equipment may have been sent to other points in Manchuria rather than being retained in Dairen.

C. Expansion Possibilities in the Metalworking and Machine-Building Industry.

Any major expansion would be limited by a shortage of skilled workers and of technical and administrative personnel, although such categories may be in ample supply for the present level of production. Any expansion would also be contingent upon receipt of equipment from the USSR.

There is only one indication of possible expansion. A press article dated September 1953 announced that a machinery spare parts plant was being built in the Dairen-Port Arthur area, to be completed in 1954. 74/ This construction is probably not a major undertaking.

V. Electrical Equipment Industry.

A. Pattern of the Industry. 75/

The electrical equipment industry has never been large. It is now represented by three former Japanese companies which were included in the Dal'energo complex until they were turned over to Chinese Communist control in 1951 and 1952.\* At least 50 percent of the output of these companies was sent to the USSR through 1949, and a large proportion of supplies came from the USSR through 1951. It is probable that with the turnover of plants to full Chinese control, most of the production started to go to Manchurian and other Chinese points.

B. Dairen Electric Appliances Plant.\*\*

In 1951 there were 400 workers at the Electric Appliances Plant. In 1952 the major activity of the plant was repair of transformers and motors. 76/ Production of new equipment included motors of 5 and 10 horsepower, transformers of 20, 50, and 100 kilowatts, and plugs, sockets, and switches. In 1949, production included

\* The insulator plant apparently was turned over in 1952. The other two plants were turned over in 1951.

\*\* This plant is in the western part of Area 10 on the map of Dairen.

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assembly of radio transmitters and receivers. 77/ Production of motors and transformers 1950 through 1954 is estimated to be 1,800 units each per year.\* In 1949, 60 percent of production went to the Maritime USSR, and the remainder was sold in Dairen and other parts of Manchuria. At present the greater part of production is probably going to Chinese customers.

As of 1952, transformer oil, electrical sheets for transformers, and bakelite came from the USSR. Components of motors other than motor bodies came from the USSR. It is probable that the USSR is still supplying materials. Motor and transformer bodies came from Machine Plant No. 17. Later the plant itself set up its own foundry. 78/

C. Dairen Light Bulb Plant.\*\* 79/

In 1952 there were 150 workers at the Light Bulb Plant. Production includes lamps of low wattage, lamps of 100, 250, and 500 watts, and lamps for automobile headlights. Probably the bulk of production is of lamps of low power. The 1949 capacity of the plant was approximately 15,000 lamps per day. Production for 1949 was approximately 1.8 million lamps,\*\*\* which is far below capacity. It is estimated that production from 1950 through 1954 amounts to 2.5 million lamps per year.\*\*\*\*

Products are sent to other points in Manchuria and through 1949 were sent to the USSR and North Korea.

The plant produces glass from local raw materials. The plant imported its tungsten and vanadium filaments from the USSR through 1951 and because of brass shortage also imported thin iron sheets for pressing into caps. Caps have been made from this material at Machine Plant No. 17. It is possible that the equipment for pressing caps may by now have been transferred from Plant No. 17 to the Dairen Light Bulb Plant. Nitrogen for the plant comes from Machine Plant No. 17.

\* This is based on the reported monthly rate of 150 motors and 150 transformers in 1949. Percentage of error is plus or minus 30 percent for motors and transformers.

\*\* This plant is in the western part of Area 10 on the map of Dairen.

\*\*\* This capacity is indicated by the production of 2 million lamp caps by Machine Plant No. 17 in 1949 for the Dairen Light Bulb Plant.

\*\*\*\* Percentage of error is plus or minus 20 percent.

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D. Insulator Plant.\*

The reported labor force of the Insulator Plant was 200 in 1950. 80/ The plant makes porcelain parts for insulators for light and heavy currents. Insulators for heavy current were made for shipment to the USSR from 1947 to 1952 and were of Soviet design. 81/ Annual production from 1948 to 1954 is estimated to be as follows: insulators (heavy voltage), 600,000; pin-type insulators, 1 million to 1.5 million; firebrick, 15,000 tons.\*\*

In 1949, porcelain came from North Korea and quartz and feldspar from Kuan-tung. Caps and pestles are made at Machine Plant No. 17.

VI. Weapons and Ammunition.

A. Storage and Loading.

It is probable that munitions facilities around Dairen are quite active. Their size makes them important as installations to be noted, although the specific functions of each installation are at this time indeterminate. Aerial photography of January 1951 shows 2 munitions facilities\*\*\* and 4 possible munitions facilities\*\*\*\* near Dairen. Some of these 6 installations include storage facilities. It is highly probable that at least one is engaged in the loading of ammunition\*\*\*\*\* Photographs indicate that 2 of the facilities\*\*\*\*\* were expanded between 1945 and 1951 and that they are quite active. 82/

These indications from aerial photography tie in with a report that in early 1953 the Dairen area was an important munitions center. 83/ Information as of 1952 indicates storage depots at points on either side of the rail line between Dairen and Port Arthur. 84/

The large chemical plant, formerly known as the Manchurian Chemical Industries Company, is probably associated with these facilities.

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\* Point 12 on the map of Dairen.

\*\* Percentage of error is plus or minus 20 percent assuming normal product mix.

\*\*\* Points 4 and 5 on the map of Dairen.

\*\*\*\* Points 1, 3, 13, and 16 on the map of Dairen.

\*\*\*\*\* Point 4 on the map of Dairen.

\*\*\*\*\* Points 4 and 5 on the map of Dairen.

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B. Manufacture of Arms and Weapons Components.

Dairen has little current plant capacity for the fabrication of weapons and ammunition. <sup>85/</sup> Some components can be made in the metalworking and machine-building plants already discussed. Machine Plant No. 18 and the Dairen Iron and Steel Plant are reported to have made shell cases of various sizes. <sup>86/</sup> The Sino-Soviet Shipbuilding Company is said to have made rifle and artillery sights. <sup>87/</sup> The Main Shops of the Ch'ang-ch'un Railway are reported to have made artillery shell casings and a few railroad armored gun carriers during World War II. <sup>88/</sup>

VII. Capabilities, Vulnerabilities, and Intentions.

A. Capabilities.

Dairen's industry is based on solid geographical factors, which include an excellent harbor and easy access to sources of raw materials and markets. Two of its engineering industries -- shipbuilding and railroad equipment -- have facilities which are among the largest in Communist China. Dairen has plant facilities for the building and repair of oceangoing merchant ships, and these facilities have the potential for conversion to naval construction and repair. Dairen also has the facilities for producing locomotives and rolling stock and for doing a large volume of repair. Its metalworking and machine-building industry is unable to match the capabilities of the two industries just named. It can produce a varied list of metal products, however, including some machine tools and other industrial machinery. The electrical equipment industry, never of important proportions, confines its principal efforts to production of lamps, low-horsepower motors, and transformers. Production of metal components of weapons and ammunition has taken place in Dairen, but the quantity has not been great, and it is believed to have been confined to simple components, such as shell casings. This activity could be expanded by diverting activity of the metalworking plants in this direction. It is believed that there are several munitions facilities in the environs of Dairen and that among these are probable loading and storage facilities of some importance.

B. Vulnerabilities.

Dairen's engineering industries are vulnerable on these counts -- inputs, labor, and power. The industries are dependent on

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the Soviet Bloc for industrial equipment and for material such as special grades of steel and some other metals. The engineering industries are handicapped by a shortage of skilled workers and of qualified technical and administrative personnel. An important source of Dairen's power is the Sup'ung (Suiho) hydroelectric plant. The bombing of this plant by the United Nations forces in June 1952 caused a power shortage in Dairen which resulted in severe restrictions in domestic use and possibly in some industrial restrictions, though the main factories appear to have continued operations. 89/

C. Intentions.

The Chinese Communists appear to have no intention of attempting a major expansion of the engineering industries of Dairen within the next 5 years. With the exception of the munitions facilities near the city and of the reported current building of a machinery spare-parts plant in the Port Arthur-Dairen area, there has been no industrial construction of more than minor importance within the engineering industries since 1945.\*

Dairen does not figure importantly in current Chinese Communist plans of industrial buildup within the engineering industries of China. Possibly the development of other centers, such as Mukden, An-shan, Harbin, and others, is all that can be handled with the available resources in materials and manpower. The Chinese Communist press makes much of the buildup in other areas, but Dairen is largely ignored. 92/ The other centers will probably retain a higher priority in the Chinese Communist press.

There are some indications of expansion which should not be ignored, though they are not necessarily signs of major expansion in the engineering industries. The USSR is reportedly aiding in the

\* This assertion is based upon reports saying that there has been no such construction. 90/ It is also based upon the negative evidence of almost complete absence from reports of mention of new construction. This is the case with both interrogations and press reports. In fact, press reports about the area are few in number. Lack of industrial construction is clearly shown also by detailed comparison of aerial photography of 1944 and 1945 with that of January 1951. 91/

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expansion of a thermal power plant in the Port Arthur-Dairen area. This work should be completed by 1957. There is currently a program of large-scale expansion of water supply for the Port Arthur-Dairen area. 93/ There have been plans for expansion of existing shipyard facilities and for the building of a large shipyard. 94/ Neither of these shipyard projects, however, has gone beyond the planning stage,\* and there are no indications that they are to be put into effect.

\* It is possible that these reports refer to one project plan; that is, the development of the former Port Arthur-Dairen Shipbuilding Company (Point 14 on the map of Dairen).

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## APPENDIX A

MACHINE PLANT NO. 17

Table 5

Production Plan of Machine Plant No. 17 for 1952 95/

<u>Product</u>	<u>Quantity</u>
Complete bridge cranes (5-ton units)	100
Complete bridge cranes (10-ton units)	10 or 15
Complete bridge cranes, experimental production (15-ton units)	1 or 2
Mine tip wagons (units)	2,000 to 3,000
Steam winches (3-ton units)	15 to 25
Gasoline storage tanks (units)	300 to 400
Water pipes of 2 or 3 sizes (tons)	1,000 to 1,500
Insulation caps (units)	3,000 to 4,000
Nuts, bolts, rivets, and hooks (tons)	500 to 600
Automotive parts and tools (for ex- ample, piston rings and cylinder sleeves)	Large quantities
Miscellaneous	Unspecified

Table 6

Actual Production of Machine Plant No. 17 96/  
1949

<u>Product</u>	<u>Quantity</u>
Bridge crane frames (units)	100
Complete bridge cranes (units)	10 to 14
Portable tire vulcanizers (units)	400
Cast iron water pipes, 600-mm diameter, 4-m lengths; angles (meters)	4,000

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Table 6

Actual Production of Machine Plant No. 17 96/  
1949  
(Continued)

<u>Product</u>	<u>Quantity</u>
Cast iron pipes, 75-mm diameter, 3-m lengths (meters)	900
Gasoline tanks, 25 cubic meters (units)	300
Iron building framework for Plant No. 17 (tons)	400 to 500
Repair work at the soda factory in Dairen, principally re-habilitation of the piping system (men working for 1 year)	80 to 100
Repair of the piping system of oil tanker (men working for 6 months)	50
Small bowls (thousand units) <u>a/</u>	10
Electric lamp caps (million units)	2
Jacks and other tools for automotive equipment	N.A.
Automotive parts; pistons, piston rings, cylinder sleeves, gears and shafts	N.A.
Drills and cutters	N.A.
Oxygen (thousand cubic meters)	240
Nitrogen (thousand cubic meters)	6
Incomplete items	
Bridge crane frames, 60-percent complete (units)	34

a. The hollowware equipment was later dissociated from Plant No. 17.

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Table 7  
Inputs for Machine Plant No. 17 97/  
1949-51

Input	Unit	Source	Quantity per Year
Coal	Tons	To beginning of Korean War, Sakhalin; after beginning of Korean War, Fu-shun	4,000
Coke	Tons	To beginning of Korean War, Sakhalin; after beginning of Korean War, Fu-shun	3,000
Power	Kilowatts	To June 1952, Sup'ung Hydroelectric Plant; after June 1952, local thermal plant	
Requirement for electric furnace in casting department			2,000
Total requirement			4,000
Steel sheets	Tons	USSR <u>a</u> / and An-shan <u>b</u> /	3,500 to 4,000 <u>c</u> /
Steel structural shapes	Tons	USSR <u>a</u> / and An-shan <u>b</u> /	800 to 1,000 <u>c</u> /
Pig iron	Tons	Komsomol'sk and the Urals, An-shan <u>c</u> /	2,500 to 3,000 <u>c</u> /
Steel rods	Tons	USSR <u>a</u> / and An-shan <u>b</u> /	Approximately 300 <u>c</u> /
Iron sheets, 0.3- to 0.7-millimeter	Tons	USSR	Approximately 200 <u>c</u> /
Nickel, chromium, ferrosilicon, ferrophosphorus, ferromanganese, aluminum, zinc, copper, and other metals		USSR	N.A.
Steel cable, at least 17-millimeter diameter	Meters	USSR and Mukden <u>d</u> /	10,400 <u>e</u> /
Insulated wire		USSR and Mukden <u>d</u> /	N.A.
Bearings for cranes	Units	USSR and Wa-fang-tien <u>f</u> /	11,500 <u>e</u> /
Electric motors	Units	USSR, Mukden in 1952; also Shanghai	115 <u>e</u> /
Coated electrodes	Tons	Plant No. 17. Wiredrawing done by Dairen Iron and Steel Plant (Machine Plant No. 19 or 20) in 1950 and 1951.	144 to 180

a. Mostly from Komsomol'sk.

b. Shipments from An-shan began in 1951.

c. Typical yearly amounts for years 1949 through 1951.

d. Shipments from Mukden began in 1951.

e. Estimated amount after production of complete cranes was begun in 1951 or 1952.

f. Shipments from Wa-fang-tien began in 1951. Wa-fang-tien is on the Liao-tung Peninsula. Chinese bearings were used for production of lesser importance. Production of Wa-fang-tien is probably insufficient as to both quality and quantity for the plant's needs.

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APPENDIX B

METALWORKING AND MACHINE-BUILDING PLANTS EXCEPT MACHINE PLANT NO. 17

Name	Location	Production Facilities	Inputs of Equipment	Labor	Production			
					Items	Volume per Year	Year	Destination
Machine Plant No. 18, 98/ on the premises of the former Dairen Machinery Manufacturing Company	Point 9 on the map of Dairen	N.A.	Some machinery from the USSR	1,000 (1954 estimate)	Boilers	N.A.		N.A.
					Pipe fittings	N.A.		N.A.
					Brake shoes (units)	2,000 to 3,000	1948	
					Hydraulic presses (200-ton units)	10	1948	
					Pumps (20- to 150-horsepower units)	24	1949	
					Cutting machines (units)	60	1949	Dairen industries
					Conical ball milling machines (units)	60	1949	
					Carbon electrodes (tons)	360	1949	
					Structural steel (tons)	1,200	1949	
					Steam rollers (units)	N.A.	1950	Probably Manchuria
					Freight cars (units)	N.A.	1952	Chinese lines
					Castings to order (units)	N.A.	1952	Dairen
Main Shops of the Ch'ang-ch'un Railway 99/	Point 7 on the map of Dairen	See III, A	See III, A	See III, A	Railroad cranes (10-ton units)	10	1946	N.A.
					Overhead traveling cranes (50-ton units)	5	1946	N.A.
					Marine winches (6-ton and 8-ton units)	100	1948	N.A.
					Railroad cranes (15-ton units)	35	1949	USSR
					Cranes	N.A.	1950-1951	USSR

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Name	Location	Production Facilities	Inputs of Equipment	Labor	Production			
					Items	Volume per Year	Year	Destination
Dairen Iron and Steel Plant; probably identifiable as Machine Plant No. 19 or 20 100/ formed by consolidation of Taika and Shinwa companies	Point 2 on the map of Dairen	Electric furnaces for making special steel. Equipment for rolling, forging, and wire drawing. (Information 1952.)	N.A.	2,000 (1949)	Special steel Steel wire, nails, nuts, and rivets	N.A. N.A.		Probably Dairen Probably Manchuria
Kuang-ho Company (Kowa Company), former Nakamura Iron Works; possibly identifiable as Machine Plant No. 19 or 20, plant may have been consolidated with Far East Electric Industrial Works 101/	Eastern part of Area 10 on the map of Dairen	Foundry under construction 1949; forges; 127 lathes (four 20-foot lathes); 14 planing machines; 30 drilling machines; 2 radio drills; 15 shaping machines; 4 slotters; 8 gear cutters; 40 emery grinders; 10 small milling machines; 16 overhead traveling cranes (two 10-ton, two 5-ton, eight 2-ton, four 1-ton). (Information 1949.) Expansion plan existed in 1950.	Machinery ordered from the USSR	314 (1950)	Lathes (6-foot units) Textile machinery Boilers Lathes (8-foot units) Cranes	50 N.A. N.A. 300 a/ N.A. a/	1949	Manchuria Manchuria Manchuria Probably Manchuria
Far East Electro-Industrial Metal Works. Present name unknown. Plant may have been consolidated with Kuang-ho. 102/	Eastern part of Area 10 on the map of Dairen	N.A.	N.A.	420 (1950)	Iron and steel structural frames Boilers Bicycle pumps Hand tools Gear castings Castings Metal frames Screws	N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A.	1948 1948 1948 1950 1950 1950 1950	N.A. N.A. N.A. Probably Dairen Probably Dairen Probably Dairen Probably Dairen

a. Planned production after the expansion of the plant.

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Name	Location	Production Facilities	Inputs of Equipment	Labor	Production			
					Items	Volume per Year	Year	Destination
Boiler Manufacturing Company 103/	Near the Chou-shui-tzu Railway Station, west of the bay	Foundry (2- to 3-ton cupola furnaces); machine shops; wood-working shops.	N.A.	500 (1949)	Tanks	N.A.	1949	Products mainly to Dairen (including the chemical plant)
					Boilers Acid-resisting cast-iron pumps (5- to 10-horsepower units)	N.A. 600	1949	

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APPENDIX C

METHODOLOGY

No technical or statistical methodology was required for this report. The information was obtained from the examination of photo intelligence and other documents.

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APPENDIX D

GAPS IN INTELLIGENCE

Production information is lacking, especially for the metalworking and machine-building industry, for which information both as to type and amount of production is very scarce and, except for that which relates to Machine Plant No. 17, is very old. Information on production of railroad equipment and of repair since 1945 is almost totally lacking. Production data for shipyards other than the Sino-Soviet Shipbuilding Company are lacking for the years since 1949.

Input information in quantitative terms is wholly lacking except for inputs of one company, Machine Plant No. 17.

Information on the size of the labor force and on the type and amount of equipment of the metalworking and machine-building plants other than Machine Plant No. 17 is old and not firm.

The nature and level of activity of the munitions facilities in the outskirts of Dairen are unknown except in vague terms.

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APPENDIX E

SOURCES

Sources on Dairen's engineering industries are scarce, old, and fragmentary, with only a few exceptions. Sources giving aggregate or over-all information are few. The Japanese and Chinese language documents are few. Among captured Japanese documents little was found which was useful. Among Japanese documents dealing with Manchuria, it is often impossible to isolate material on Dairen or Kuan-tung. Moreover, Japanese policy of censorship precluded the giving of production information in quantitative terms after the late 1930's. Any Japanese and Chinese language documents that were found to be useful were exploited for this report by CIA FDD (FDD Summary No. 143, Data on Population and Industry in Dairen, 1938-1943, 21 May 1954, CONFIDENTIAL, and others).

25X1A2g There are very few items from the Chinese Communist press which postdate 1950. These items are for the most part uninformative.

25X1A2g There are numerous [redacted] reports on plants. Some of these are excellent. Notable among them is [redacted] 25X1A2g  
25X1A [redacted] There are excellent [redacted] on the former 25X1A2g  
Shops of the South Manchuria Railway. Information in these reports, however, is not later than 1949.

25X1C Information since 1949 is found for the most part in interrogations [redacted] It is largely fragmentary, except for that which deals with Machine Plant No. 17, which is covered thoroughly by several documents from one source whose information is dated March 1952. This source responded in detail to requirements laid on for this report and is believed to be reliable. It agrees with that from other sources.

A principal source of information was the aerial photography of 1944, 1945, and 1951. ORR photo intelligence exploited this material thoroughly in conjunction with ground reports.

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Evaluations, following the classification entry and designated "Eval.," have the following significance:

<u>Source of Information</u>	<u>Information</u>
Doc. - Documentary	1 - Confirmed by other sources
A - Completely reliable	2 - Probably true
B - Usually reliable	3 - Possibly true
C - Fairly reliable	4 - Doubtful
D - Not usually reliable	5 - Probably false
E - Not reliable	6 - Cannot be judged
F - Cannot be judged	

"Documentary" refers to original documents of foreign governments and organizations; copies or translations of such documents by a staff officer; or information extracted from such documents by a staff officer, all of which may carry the field evaluation "Documentary."

Evaluations not otherwise designated are those appearing on the cited document; those designated "RR" are by the author of this report. No "RR" evaluation is given when the author agrees with the evaluation on the cited document.

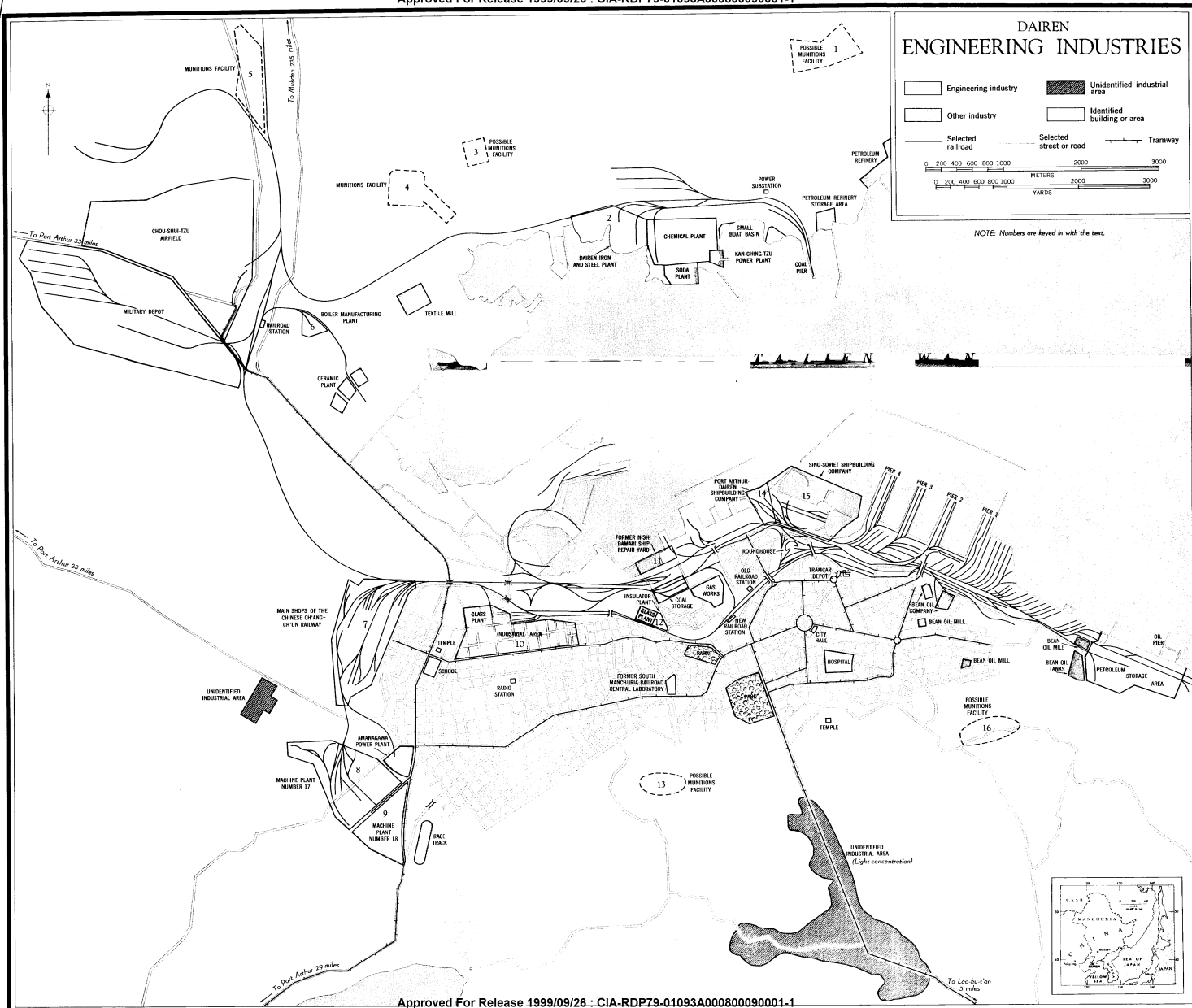
25X1A



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